LIVERPOOL CITY COUNCIL

Ref No.: SSD1-5/2021
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To the assessing officer,

Re: Submission for State Significant Infrastructure - Warragamba Dam Raising Project (SSI-8441)

I refer to the request to provide comments on the State Significant Infrastructure - Warragamba Dam Raising Project (SSI-8441).

It is understood that the EIE is seeking to raise the dam wall of Warragamba Dam in an effort to alleviate the risk to life and property in the scenario of a flooding event. This would be achieved through raising the level of the central spillway crest by around 12 metres and the auxiliary spillway crest by around 14 metres above the existing full supply level (FSL) for temporary storage of inflows. The spillway crest levels and outlets control the extent and duration of the temporary upstream inundation. There would be no change to the existing maximum volume of water stored for water supply. The proposal is to provide flood mitigation to reduce the significant existing risk to life and property in the Hawkesbury-Nepean Valley downstream of the dam.

Upon review of the EIS, staff at Liverpool City Council are generally supportive of the proposal and its ambitions to provide for improved safety outcomes for residents in the Liverpool LGA. However, staff would like to see additional information relating flooding, biodiversity, and traffic impacts.

Noting the above, Council staff provide detailed comments and recommendations relating to, flooding impacts, biodiversity impacts and traffic management requirements impacting specifically upon the Liverpool LGA. These detailed comments are provided in the attachment to this letter and are to be considered in the assessment of the proposed development.

Should you require further information or clarification, please contact Danielle Hijazi, Assistant Strategic Planner on 8711 7627.

Yours sincerely,

Luke Oste
Coordinator Strategic Planning

Attachment A – Detailed Comments

Flooding

Nature of the development

The Warragamba Dam Raising project has been developed to provide extended temporary storage capacity for large inflow events into Lake Burragorang to facilitate downstream flood mitigation. The key objective of the project is to provide flood mitigation to reduce the significant existing risk to life and property in the Hawkesbury-Nepean Valley downstream of the dam. The project involves raising the level of the central spillway crest by around 12 metres and the auxiliary spillway crest by around 14 metres above the existing full supply level (FSL) for temporary storage of inflows as shown in the figures below.

Figure 1 - Existing and Proposed Warragamba Dam

The peak outflow in all design flood events would be significantly reduced resulting from the proposed works. The peak 1%AEP flow would be reduced from 9660m^3/sec to 3,800 m^3/s, a reduction of approximately 60%. In the event of probable maximum flood (PMF), peak flow would be reduced from 40,950 m^3/sec to 36,390 m^3/sec. The project would result in a range of flood mitigation benefits to the Hawkesbury-Nepean Valley including:

- reduction in flooding extents across all flood events especially in the Penrith, Windsor, Richmond, and South Creek areas. This would result in lower flood damage and social impacts from flooding; and

- there would be a more predictable rise in floodwaters and evacuation routes would remain open for longer. This would reduce the risk of loss of human life during floods.

While the project would provide significant benefits to the flood affected community downstream of the dam, there would be extended inundation with inflows building on the upstream side of the dam wall. The inundation extent is controlled by the peak flood level at the dam wall and the topography across the upstream catchment. Depth and duration of inundation would be increased from approximately 4.8m to 10.5m and 4 days to 11 days respectively in a 1%AEP flood.

It is noted that there would be no change to the existing maximum volume of water stored for water supply. The project would delay downstream flooding, which would reduce current

downstream flood peaks, and allow more time for safe evacuation of the flood affected community.

Flooding Impact on the Liverpool LGA

South Creek: The proposed dam raising project would provide significant flood risk management benefits in South Creek catchment. The peak 1% AEP flood level would be reduced by approximately 4 metres. The flood benefits from reduced flood depth will be contained within the Penrith LGA as shown in the figure below.

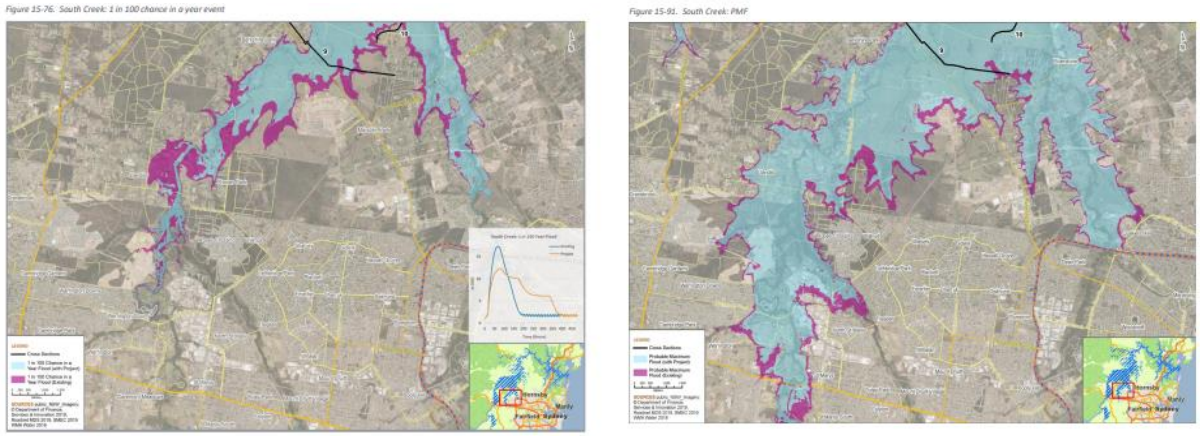

Figure 2 - South Creek 1%AEP flood extend and PMF flood extent

Wallacia/Greendale: The proposed dam raising works would provide significant flood risk management benefits in Wallacia and Greendale within the Liverpool LGA. The peak flood depth will be reduced by approximately 4 metres in the 1% AEP flood event as shown in the flood maps below.

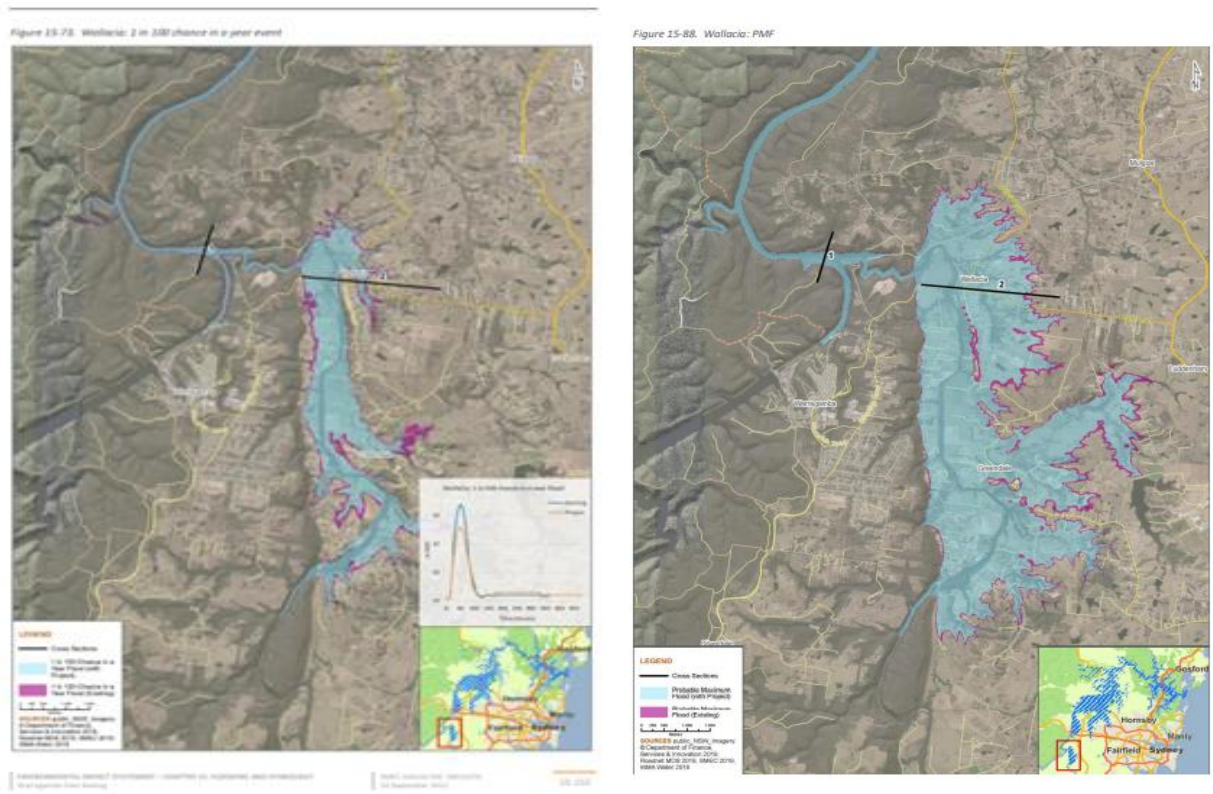

Figure 3 - 1%AEP flood extent at Wallacia and PMF flood extent at Wallacia

It is understood that the current flood study is a detailed and comprehensive study using the most up to date data and modelling techniques.

Traffic and Transport

Council staff are cognisant that whilst the operation of the raised dam wall is unlikely to generate additional vehicle moments, the construction phase associated with the project will result in increased vehicle movements on the local road network. To ensure that impacts to the local road network are understood and appropriately mitigated, the impacts resulting from the construction phase must be understood, and strategies developed to deal with these impacts.

Recommendations:

1. It is noted that the intersection of Northern Road/Park Road is operating at an unacceptable Level of Service (i.e. LoS F) based on 2018 survey data. Hence, consideration is given to provide some temporary treatments to improve road safety at this intersection during construction. This is to be addressed as part of road safety audit for construction.

2. The proposed traffic impact mitigation measures in Table 7-1 of Warragamba Dam Raising EIS Appendix O - Traffic and Transport Assessment are to be included in the development consent conditions.

3. A stage 1 road safety audit should be carried out at the detailed construction traffic management plan development stage and submitted to Liverpool City Council for review.

4. A Construction Traffic Management Plan (CTMP) detailing updated construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be prepared for future developments and submitted to Liverpool City Council's Traffic and Transport Section for approval prior to the issue of a Construction Certificate.

5. The CTMP is to outline the need for a Road Occupancy Permit issued by Council or Road Occupancy Permit issued by the Transport Management Centre. Works within the road reserve shall not commence until the construction traffic management plan has been endorsed.

Natural Environment

The EIS identifies a potentially significant downstream impact to threatened ecological communities and species due to events including:

- Reduction of flooding extent in wetland and floodplain vegetation communities and habitats;
- Increased duration of inundation in terrestrial woodland and forest communities and habitat; and
- Bank erosion and slumping resulting in vegetation community and habitat degradation.

There is a large degree of uncertainty regarding the extent and severity of these impacts within the Liverpool LGA.

Impacts on down-stream biodiversity - Survey

The downstream on-ground biodiversity survey area only covered land within the existing 1 in 10 chance in a year flood event. The EIS indicates that DPIE agreed upon this approach (as stated on page 9-7). This is in contrast with the substantially larger study area for Matters of National Environmental Significance agreed upon by DoEE, which encompasses land up to the existing Probable Maximum Flood.

Recommendation:

6. Given the degree of impact uncertainty, the larger area identified by DoEE would appear to be more appropriate to ensure that impacts are not underestimated, and should be supported by an expanded on-ground survey area rather than relying on desktop resources.

Impacts on down-stream biodiversity – Changes to environmental flows

Infrastructure to allow for the management of environmental flows is proposed as part of the project. However, potential impacts of environmental flow changes are excluded from the assessment as it is proposed to be considered separately. The SEARs for the project include the

requirement that "The proponent must assess the downstream impacts on threatened biodiversity, native vegetation and habitats resulting from any changes to hydrology and environmental flows."

Recommendation:

7. Given that changes to environmental flows have the potential to interact with other impacts cause by the Project, potential impacts should be identified and assessed.

Impacts on down-stream biodiversity – Protected lands

Two areas of biodiversity significance lie within the Liverpool LGA which may be impacted by the proposal, including Bents Basin State Conservation Area and Gulguer Nature Reserve. These should be considered by the EIS where appropriate.

Recommendation:

8. Chapter 20 (protected and sensitive lands) and table 9-20 should include the consideration of Bents Basin State Conservation Area and Gulguer Nature Reserve.

Impacts on down-stream biodiversity – Management of loss of biodiversity

Uncertainties for the downstream areas caused by the project

The EIS acknowledges a high degree of uncertainty with regard to quantifying and qualifying downstream impacts. The resolution of uncertainties included in Table 29-4 for biodiversity are only discussed for upstream impacts, but are also applicable to downstream impacts. This includes the following uncertainties:

- Impacts of temporary inundation on vegetation
- Extent of plant community types
- Presence and distribution of threatened species

The only management measure identified for downstream impacts is to develop an operational protocol for the Flood Mitigation Zone. The EIS assumes that the protocol would seek to minimise potential biodiversity impacts downstream associated with inundation. However, this would be subject to meeting operational priorities for protection of life and property (the primary purpose of the project), which introduces significant uncertainty in the feasibility of minimising biodiversity impacts. The EIS should assume that there is limited opportunity for the protocol to minimise impacts to biodiversity to ensure that impacts are not underestimated.

No biodiversity offsetting is proposed for impacts to downstream areas despite the identified potential for significant impacts. As noted above, only one management measure has been identified. The EIS appears to identify the difficulties of quantifying the downstream impacts as rationale for the general absence of mitigation and offset measures. However, this should be taken as an indication that a conservative approach is warranted.

Recommendation:

9. Additional management measures should be prescribed to help mitigate potential downstream impacts. This should include long-term monitoring, preventative measures such as improving riparian vegetation to protect banks from erosion, and protocols for responding to any impacts potentially caused by the project. Given the potentially significant residual impacts, offsetting measures should be considered.